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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,075	03/19/2004	Jeffrey D. Johnson	090446-0200	7921

38706 7590 07/02/2008

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PALO ALTO, CA 94304

EXAMINER	
CHONG, KIMBERLY	
ART UNIT	PAPER NUMBER
1635	
MAIL DATE	DELIVERY MODE
07/02/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/805,075	JOHNSON ET AL.	
	Examiner	Art Unit	
	KIMBERLY CHONG	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21 and 35-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21, 35-37* is/are rejected.

7)☒ Claim(s) *21, 35-37* is/are objected to.

8)☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Request for Continued Examination

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/17/2008 has been entered.

Status of Application/Amendment/Claims

Applicant's response filed 04/17/2008 has been considered. Rejections and/or objections not reiterated from the previous office action 10/18/2007 are hereby withdrawn. The following rejections and/or objections are either newly applied or are reiterated and are the only rejections and/or objections presently applied to the instant application. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

With entry of the amendment filed on 04/17/2008, claims 21 and 35-37 are pending and currently under examination in the application.

Claim Objections

Claims 21 and 35-37 are objected to because the claim recites the method is for identifying an agent for treating a diabetic individual with impaired glucose-induced

insulin secretion and step (iv) requires administering the agent to a "pre-diabetic animal", which would not have impaired glucose-induced insulin secretion and therefore it is unclear how the pre-diabetic animal could be used to identify an agent used to treat an individual with impaired glucose-induced insulin secretion by measuring whether or not the agent improves the response to glucose.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyers et al. (US 20020009779), Newgard et al. (US Patent No. 5/854,067, hereinafter referred to as 'Patent '067') and Liang et al. (J. of Biological Chemistry, 1990. Vol. 265: 16863-16866).

The instant claims are drawn to a method of identifying an agent for treating a diabetic individual having impaired glucose-induced insulin secretion, the method comprising contacting a candidate agent with a polypeptide having glucose phosphorylating activity that comprises at least 20 contiguous amino acids of SEQ ID NO. 2, determining the binding of the agent to the polypeptide, selecting an agent that decrease the activity of the polypeptide, administering the agent to a diabetic or pre-diabetic animal, determining the response to the animal to glucose and select an agent

that improves the response to glucose. The claims are further drawn the polypeptide comprising SEQ ID NO. 2 and wherein the contacting step comprises contacting a cell that expresses the polypeptide or an expression vector and contacting a pancreatic islet cell with a candidate agent.

Meyers et al. teach a method of identifying candidate test compounds or agents which bind to a polypeptide having glucose phosphorylating activity, identified as 50365 polypeptide (see paragraph 0224). The 50365 polypeptide taught by Meyers et al. is identical to the instantly claimed polypeptide having SEQ ID NO. 2 and therefore comprises SEQ ID NO. 2 (see attached sequence search cited as SEQ ID No. 5). Meyers et al. teach the 50365 polypeptide is a novel hexokinase family member and teach hexokinases are important for normal glycolytic activity and irregularities in their function can lead to disorders such as diabetes (see paragraph 0004-0005) and teach the novel hexokinase comprises homologous regions to known hexokinases (see pages 3 and 4). Meyers et al. teach a host cell comprising said polypeptide and further teach an expression vector comprising said polypeptide (see paragraph 0007). Meyers et al. teach binding of said candidate test compound or agent with the 50365 polypeptide and determining whether the test compound or agent binds to said polypeptide by assaying for the 50365 activity (see paragraph 0224-0226) wherein said contacting of said candidate agent with the 50365 polypeptide occurs in a host cell expressing said polypeptide (see paragraph 0230). Meyers et al. teach a method of administering said agent, identified as capable of binding and modulating expression of 50365 polypeptide, to a subject at risk of a disorder or having a disorder associated with increased

expression of said 50365 polypeptide and preventing in a subject, said disorder wherein the disorder is diabetes (see paragraph 0379-0382 and 0392 and 0068). The method of preventing diabetes in a subject would meet the limitation of determining the response of the animal to glucose since glucose metabolism and modulation thereof is directly related to diabetes (see paragraph 0055-0057 and 0068). Meyers et al. do not teach identifying an agent for treating a diabetic individual having impaired glucose-induced secretion or teach the steps of determining the response of an animal to glucose comprising determining the level of glucose-induced insulin and contacting a pancreatic islet cell with a candidate agent.

Patent ‘067 teach islet B-cell function is impaired in individuals who suffer from diabetes and teach the role hexokinase has in regulating glucose which is essential for signaling insulin secretion (see column 1). Patent ‘067 teach methods of treating impaired glucose induced insulin secretion by administering cells that secrete insulin in response to glucose however this treatment is impaired due to increased levels of hexokinase (see column 2). Patent '067 teach methods of inhibiting hexokinases in methods of improving responses to glucose in the treatment of diabetes (see column 2).

Liang et al. teach isolating pancreatic islet cells and a method of determining the level of glucose- induced insulin secretion in pancreatic cells (see Figure 1).

It would have been obvious to one of skill in the art at the time the invention was made to identify agents that inhibit the novel hexokinase identified by Meyers et al. for a method of treating a diabetic individual having an impaired glucose-induced insulin secretion, as taught by Patent '067. It would have further been obvious to one of

ordinary skill in the art at the time the invention was made to use the method of determining the level of glucose-induced insulin secretion, as taught by Liang et al. in the method of identifying a candidate agent that regulates glucose metabolism as claimed and to use a pancreatic islet cell in the methods of identifying a candidate agent that regulates glucokinase activity.

It would have been obvious to try the novel hexokinase polypeptide taught by Meyers et al. in an assay for identifying agents for treating a diabetic individual having impaired glucose-induced insulin secretion given Patent '067 teach the role of hexokinases have in diabetes and the importance of inhibiting the activity of hexokinase in methods of treating impaired glucose induced insulin secretion. One would have wanted to identify agents that could inhibit the novel hexokinase identified by Meyers given Meyers et al. and Patent '067 teach hexokinases are important for normal glycolytic activity and irregularities in their function can lead to disorders such as diabetes and further controlling expression of such enzymes could improve an individual's response to treatment of diabetes. In the assay taught by Meyers et al. one of skill in the art would have wanted to be able to determine the response of the animal to glucose using the method taught by Liang et al. because Liang et al. teach glucose is a important determinant of glucokinase activity i.e. hexokinase activity, in pancreatic cells (see page 16865) and because the activity of glucokinase plays a crucial role in metabolic disorders involving glucose, such as diabetes, it would be important to monitor the response of glucose, particularly in a methods of treating diabetes, as taught by Meyers et al. and Patent '067. Further. Liang et al. determining the role of

hexokinases is important in the metabolism-depended process of insulin synthesis (see past paragraph page 16866). Moreover, one of skill in the art would have wanted to use an pancreatic islet cell in the assay taught by Meyers et al. because Patent '067 teach the importance of islet cells in the recognition of glucose and these cells are critical to the control of blood glucose uptake (see column 1) and therefore the islet cell would be an important cell to determine the response to glucose in diabetic subjects.

One of skill in the art would have reasonably expected to be able to use the novel hexokinase taught by Meyers et al. in an assay to identify agents for treating a diabetic individual given hexokinases are known to play a role in diabetes and given Meyers et al. teach said novel hexokinase has homologous regions to known hexokinases with the known activity of glucose phosphorylation.

Thus, in the absence of evidence to the contrary, the invention is *prima facie* obvious to one of skill in the art.

Response to Applicant's Arguments

Re: Claim Rejections - 35 USC § 103

The rejection of claims 21, 23 and 34-37 under 35 U.S.C. 103(a) as being unpatentable over Meyers et al. (US 20020009779) and Liang et al. (J. of Biological Chemistry, 1990. Vol. 265: 16863-16866) is withdrawn in view of the new grounds of rejection above and therefore response to Applicant's argument is moot.

Sequence Alignment

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RESULT 1
US-09-861-801-2
; Sequence 2, Application US/09861801
; Patent No. US20020009779A1
; GENERAL INFORMATION:
;  APPLICANT: Meyers, Rachel A.
;  APPLICANT:  Williamson, Mark
;  TITLE OF INVENTION: 50365, A NOVEL HEXOKINASE FAMILY MEMBER
;  TITLE OF INVENTION:  AND USES THEREFOR
;  FILE REFERENCE: 10448-055001
;  CURRENT APPLICATION NUMBER: US/09/861,801
;  CURRENT FILING DATE:  2001-05-21
;  PRIOR APPLICATION NUMBER: US 60/205,508
;  PRIOR FILING DATE: 2000-05-19
;  NUMBER OF SEQ ID NOS: 5
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 2
;   LENGTH: 917
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-861-801-2

  Query Match             100.0%;  Score 4717;  DB 3;  Length 917;
  Best Local Similarity   100.0%;  Pred. No. 0;
  Matches  917;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps
0;

Qy          1 MFAVHLMAFYFSKLKEDQIKKVDRFLYHMRLSDDTLLDIMRRFRAEMEKGLAKDTNPTAA 60
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Db          1 MFAVHLMAFYFSKLKEDQIKKVDRFLYHMRLSDDTLLDIMRRFRAEMEKGLAKDTNPTAA 60

Qy         61 VKMLPTFVRAIPDGSENGEFLSLDLGGSKFRVLKVQVAEEGKRHVQMESQFYPTPNEIIR
120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VKMLPTFVRAIPDGSENGEFLSLDLGGSKFRVLKVQVAEEGKRHVQMESQFYPTPNEIIR
120

Qy        121 GNGIELFEYVADCLADFMKTKDLKHKKLPLGLTFSFPCRQTKLEEGVLLSWTKKFKARGV
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Db        121 GNGIELFEYVADCLADFMKTKDLKHKKLPLGLTFSFPCRQTKLEEGVLLSWTKKFKARGV
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Qy        181 QDTDVVSRLTKAMRRHKDMDVDILALVNDTVGTMMTCAYDDPYCEVGVIIGTGTNACYME
240
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Db        181 QDTDVVSRLTKAMRRHKDMDVDILALVNDTVGTMMTCAYDDPYCEVGVIIGTGTNACYME
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Qy        241 DMSNIDLVEGDEGRMCINTEWGAFGDDGALEDIRTEFDRELDLGSLNPGKQLFEKMISGL
300
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Db        241 DMSNIDLVEGDEGRMCINTEWGAFGDDGALEDIRTEFDRELDLGSLNPGKQLFEKMISGL
300
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Qy        301 YLGELVRLILLKMAKAGLLFGGEKSSALHTKGKIETRHVAAMEKYKEGLANTREILVDLG
360
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Db        301 YLGELVRLILLKMAKAGLLFGGEKSSALHTKGKIETRHVAAMEKYKEGLANTREILVDLG
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Qy        361 LEPSEADCIAVQHVCTIVSFRSANLCAAALAAILTRLRENKKVERLRTTVGMDGTLYKIH
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Db        361 LEPSEADCIAVQHVCTIVSFRSANLCAAALAAILTRLRENKKVERLRTTVGMDGTLYKIH
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Qy        421 PQYPKRLHKVVRKLVPSCDVRFLLSESGSTKGAAMVTAVASRVQAQRKQIDRVLALFQLT
480
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480

Qy        481 REQLVDVQAKMRAELEYGLKKKSHGLATVRMLPTYVCGLPDGTEKGKFLALDLGGTNFRV
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Qy        541 LLVKIRSGRRSVRMYNKIFAIPLEIMQGTGEELFDHIVQCIADFLDYMGLKGASLPLGFT
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Qy        601 FSFPCRQMSIDKGTLIGWTKGFKATDCEGEDVVDMLREAIKRRNEFDLDIVAVVNDTVGT
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Qy        661 MMTCGYEDPNCEIGLIAGTGSNMCYMEDMRNIEMVEGGEGKMCINTEWGGFGDNGCIDDI
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Qy        721 RTRYDTEVDEGSLNPGKQRYEKMTSGMYLGEIVRQILIDLTKQGLLFRGQISERLRTRGI
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Qy        781 FETKFLSQIESDRLALLQVRRILQQLGLDSTCEDSIVVKEVCGAVSRRAAQLCGAGLAAI
840
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Db        781 FETKFLSQIESDRLALLQVRRILQQLGLDSTCEDSIVVKEVCGAVSRRAAQLCGAGLAAI
840
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Qy          841 VEKRRREDQGLEHLRITVGVDGTLYKLHPHFSRILQETVKELAPRCDVTFMLSEDGSGKGA
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Db          841 VEKRRREDQGLEHLRITVGVDGTLYKLHPHFSRILQETVKELAPRCDVTFMLSEDGSGKGA
900

Qy          901 ALITAVAKRLQQAQKEN 917
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly Chong whose telephone number is 571-272-3111. The examiner can normally be reached Monday thru Friday between 7-4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James (Doug) Schultz can be reached at 571-272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For more information about the PAIR system, see http://pair-direct.uspto.gov.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

/Kimberly Chong/
Examiner
Art Unit 1635